and took a prominent part in all public health and educational movements; he was health officer to Port Jackson, president of the Board of Health, chairman of the board of the Royal Prince Alfred Hospital, trustee of the Australian Museum, and held many other public posts too numerous to mention. His activities in so many directions were recognised by the conferment of honorary degrees (M.D., Universities of Melbourne and Sydney; LL.D., University of Edinburgh; D.Sc., University of Durham), and finally by the honour of knighthood in 1914.

Anderson Stuart was held in high affection by his students, colleagues, and numerous friends in both hemispheres. He leaves a widow and several sons (who saw service in the recent war) to mourn his loss, and to them our heartfelt sympathy is offered.

By the death of Mr. J. S. MacArthur on March 16 industrial chemistry has lost a notable exponent. Mr. MacArthur's name will always be remembered in connection with the Forrest-MacArthur patent for the extraction of gold from its ores by means of cyanide. It is given to few men to discover a process which has had such a far-reaching effect in almost every branch of civilised life. The influence of an enormously increased quantity of gold available for mankind has been—as, indeed, it must be—profound, no matter whether it is for good or for evil. Compared with the huge sums of money involved, the amount accruing to Mr. MacArthur out of this patent was infinitesimal. His type was essentially a pioneering one. The initial work in connection with the extraction of gold was carried out with small funds in a laboratory which was in reality a cellar at the back of a Glasgow tenement house. After this work was completed, Mr. MacArthur engaged in many commercial ventures in connection with chemistry and mining, but, with the possible exception of his last, none of them seemed to possess the elements of permanent success. This was the extraction of radium from its ores, which he carried on first of all in Cheshire, and then practically on the shores of Loch Lomond, in order to avail himself of the purest possible water. He was proud of his works there, and delighted to feel that he was able to carry on his work in the midst of such beautiful surroundings. Mr. MacArthur's personality was delightful and genial. His travels had been world-wide, and to anyone interested in mineralogy and travel he was indeed entertaining.

Mr. James Procter, whose death occurred on March 6, was born in 1841. He took a prominent part in the design and manufacture of the engines required for blast-furnace work and iron and steel works, and is said to have been the first British engineer to construct blowing engines with mechanically controlled valves. Mr. Procter was a member of the Institution of Mechanical Engineers and of the Iron and Steel Institute.

Notes.

As president of the British Association at its meeting in Cardiff on August 24–28 next, Prof. W. A. Herdman, of Liverpool University, will deal in his inaugural address with oceanography, of which he will give a general survey, and discuss in detail certain special problems and recent investigations, with particular reference to the sea-fisheries. The following presidents of sections have been appointed:—A (Mathematics and Physics), Prof. A. S. Eddington; B (Chemistry), Mr. C. T. Heycock; C (Geology), Dr. F. A. Bather; D (Zoology), Prof. J. Stanley Gardiner; E (Geography), Mr. J. McFarlane; F (Economics), Dr. J. H. Clapham; G (Engineering), Prof. C. F. Jenkin; H (Anthropology), Prof. Karl Pearson; I (Physiology), Mr. J. Barcroft; K (Botany), Miss E. R. Saunders; L (Education), Sir Robert Blair; and M (Agriculture), Prof. F. W. Keeble.

In the interests of physiological and medical research, we may congratulate ourselves that the debate on the mischievous and unnecessary Dogs Protection Bill of Sir F. Banbury was "adjourned" on Friday last. Owing to the length of the discussion on the really important Early Closing Bill, that on the former Bill was prolonged until the rising of the House. It may be pointed out once again that no other animal of the size of the dog can be kept under laboratory conditions in a healthy state, and that the general chemical changes in this animal are closely similar to those of man, mainly owing to its omnivorous nature. The letter by Dr. Thos. Lewis in the *Times* of March 19 shows how obstructive the exclusion of the dog would be to one branch of investigation of great practical utility; and an equally strong case could easily be made out for many others. The report of the last Royal Commission on Vivisection shows that adequate provision against any possible cruelty has already been made, even if it were necessary to do so.

His Majesty the King has approved the award of the Royal medals of the Royal Geographical Society as follows:—Founder's medal to Mr. H. St. John B. Philby, for his two journeys in south-central Arabia, 1917 and 1918; and Patron's medal to Prof. Jovan Cvijic, Rector of the University of Belgrade, for distinguished studies of the geography of the Balkan Peninsula. The council of the society has awarded the Victoria medal to Lt.-Col. H. S. L. Winterbotham, for his exceptional services to the country in the initiation and development of scientific methods of artillery survey and the production of high-class maps of inaccessible areas. Other awards are:—Murchison grant to Miss Czaplicka, for her ethnographical and geographical work in northern Siberia; Cuthbert Peek grant to Mr. A. W. Pearson Chinnery, to assist him in continuing his work in the unexplored parts of New Guinea; Back grant to Mr. J. M. Wordie, for his scientific work on the Antarctic Expedition of 1914–17; and Gill memorial to Mr. Reginald Farrer, for his journeys on the Chinese borders of Tibet.

SIR JOSEPH LARMOR has been elected a corresponding member of the French Academy of Sciences in the section of geometry.

AT the meeting of the Royal Irish Academy on Tuesday, March 16, the following were elected honorary members in the section of science:—M. Henri Louis le Châtelier, Prof. George Ellery Hale, Prof. Augustus Edward Hough Love, and Sir Ernest Rutherford.

A COMMITTEE has been appointed to consider and report to the Minister of Transport on the question of the electrification of railways. The Committee is constituted as follows:—Sir Alexander Kennedy (chairman), Sir John Aspinall, Mr. A. R. Cooper, Mr. Philip Dawson, Sir Alexander Gibb, Mr. C. H. Merz, Sir Philip Nash, Sir John Snell, Sir Henry Thornton, and Major Redman.

THE Recording Secretary of the Nova Scotian Institute of Science has been good enough to inform us that at a meeting of the institute held at Halifax on March 8, on the motion of Mr. H. Piers, seconded by Dr. D. Fraser Harris, it was "resolved that the Nova Scotian Institute of Science convey to the publishers and Editors of NATURE, London, its congratulations on the occasion of the fiftieth anniversary of the establishment of that well-known scientific journal, and wish them continued success in the future." On behalf of the publishers, and for ourselves also, we thank the institute for its kind resolution of appreciation and trust.

A PROJECT for systematic exploration in Mediterranean oceanography was started at an international conference recently held at Madrid. According to *La Géographie* for January (vol. xxxiii., No. 1), the States represented were France, Italy, Spain, Greece, Monaco, Egypt, and Tunis. A commission was founded, with headquarters at Monaco and the Prince of Monaco as president. This commission will consider the methods to be adopted. Ships for the work are under construction or being planned by France, Italy, Spain, and Monaco. A beginning will be made this spring, France and Italy working in the Dardanelles and Monaco and Spain in the Straits of Gibraltar. The secretary of the central commission is Dr. J. Richard, Musée Océanographique, Monaco.

COL. VAN RYNEVELD and Capt. Brand arrived at Cape Town on March 20, and thus accomplished a flight along Africa from north to south. Three machines were used. The first left Brooklands on February 4 and was wrecked at Wadi Halfa on February 11. A new start was made from Cairo on February 22 with an aeroplane fitted with the engines from the first machine, and a flight was made so far as Bulawayo, where the machine crashed on March 6. On March 17 a machine was supplied by the Union Government to replace this, and with it Col. van Ryneveld and Capt. Brand completed their African air route of more than five thousand miles. Though not associated with scientific observation during the journey, the flight is a notable feat in the history of aviation.

DR. CHALMERS MITCHELL, in cablegrams from Dar-es-Salaam, published in the *Times* of March 15 and 16, graphically summarises his impressions on the physiography of the Nile basin as seen in his flight from Cairo to Tabora. His despatch depicts the unity of the processes which have moulded the surface of north-eastern Africa. The dominant features due to earth movements are being slowly smothered by sheets of sand and silt deposited in river deltas, in the marginal lakes formed where tributaries are barred entrance to the main river by the raising of its bed and banks, and in wide basins slowly being converted to plains by wind-borne dust. Dr. Chalmers Mitchell represents East Africa as having been cracked, whereas most other lands have been folded, and its vastest plains as due more to wind than to water. The lowlands are being filled by sub-aerial drift which buries the lower irregularities, and leaves the peaks rising abruptly out of the plains like reefs through the sand upon a shore. In the second part of his report Dr. Chalmers Mitchell refers to the beauty of the country, despite its aridity, and offers strong testimony to the progress which has been achieved in the Tanganyika territory, owing to "much ingenuity and vast expenditure of money, well laid out." His remarks on the elephants, giraffes, and antelopes observed during the flight show that the aeroplane would be of great service to sportsmen in the search for big game.

IT has frequently been suggested that the very heavy cylinders used for compressed gases are now out of date, and that the advances made during recent years in the science of metallurgy, particularly in connection with steel and its alloys, should enable a vessel to be produced which is lighter as well as safe. In consequence of these suggestions the Department of Scientific and Industrial Research formed a Gas Cylinders Committee in 1918, the members of the Committee being Prof. H. C. H. Carpenter (chairman), Prof. C. V. Boys, Prof. E. G. Coker, Dr. J. A. Harker, Major Cooper-Key, Prof. F. C. Lea, Eng.-Capt. J. McLaurin, Sir Charles Parsons, Major C. J. Stewart, and Prof. J. F. Thorpe. Compressed gases were much used during the war for various purposes, such as, for example, in supplying oxygen for airmen flying at high altitudes and for poison-gas warfare. Industrially also, in war, as in peace, there has been an immense development in the use of oxygen and acetylene for welding, of carbon dioxide and ammonia for refrigeration, of hydrogen for ballooning, etc., which no doubt will be maintained. Arising from the necessity of war, very light cylinders have been manufactured for the purposes above mentioned, and slightly heavier cylinders were made to an Admiralty specification. The Gas Cylinders Committee, in conjunction with the leading tube manufacturers, has made a number of tests of cylinders based upon these war specifications, and it is hoped that as a result of this work it may be possible to recommend the adoption of cylinders considerably lighter than those now in general use.

THE first engineering school to be established in London was that at University College. Since 1828 a succession of engineers have been educated there under an eminent series of professors, and it would be a thousand pities if its work in this direction were now to be cramped for lack of funds. The case was ably put by Prince Arthur of Connaught at a lunch at the Savoy Hotel on Friday last. His Royal Highness explained that the present scheme of extensions of the engineering laboratories of University College had a pre-war inception, and he paid a tribute to the valuable anti-submarine and other electrical research work carried out during the war by the professors at the college. The war had made us realise the necessity for adequate provision for scientific education and research, and he urged the need for the laboratories opened twenty-seven years ago by his father to be modernised and brought up to date. Twenty-four thousand pounds out of the 100,000*l.* which they were asking for had already been subscribed, including 10,000*l.* from Lord Cowdray in memory of his son, the Hon. F. G. Pearson, who lost his life during the war. Lord Cowdray had also promised a further 10,000*l.* when a total of 70,000*l.* had been collected. Dr. Russell Wells (Vice-Chancellor of the University of London) also emphasised the necessity for improved technological education for the future prosperity of the country, and announced further subscriptions aggregating more than 4000*l.* Sir Ernest Moir (honorary treasurer to the fund) supported the appeal, and Sir Robert Hadfield referred to the valuable research and educational work done at the college, which could not be continued without adequate funds. Sir Gregory Foster (Provost of University College) explained how important it was that the extensions should be put in hand without delay, and pointed out that, although the Government policy was to provide grants for maintenance purposes, capital expenditure had to be met entirely by voluntary subscription.

A PAMPHLET entitled "Currency Reform and the Need for a Nickel Coinage on a Decimal Basis," issued by the Decimal Association, directs attention to the recommendations in favour of decimal coinage which have been made from time to time by committees appointed by the Government to consider the question of currency reform. The simplification of account-keeping and of conversions of values into foreign equivalents which the introduction of a decimal coinage would necessarily secure is an advantage which would benefit the whole of our business community, and, in addition, effect a great saving of time in our schools. The Decimal Association is in favour of the pound-mil system, which retains our gold coins and replaces the present bronze coinage by new denominations of 4 per cent. lower value. The main objection to the alternative decimal systems is that they would impair the prestige of the pound sterling, which under the pound-mil system is retained intact. Proposed changes in the materials of our coins are now under consideration by the Government, and the pamphlet urges that the opportunity should be taken to get rid of our present inconvenient system and introduce a new coinage on a decimal basis.

THE second of the Chadwick public lectures on military hygiene was delivered by Gen. Sir John Goodwin, Director A.M.S., on March 15. The lecturer reviewed the Army hygiene during the recent war. The clothing served out to the troops was of the best, and special attention was devoted to feeding and rationing. The water-supply in large measure was subjected to chlorination in order to purify it, bleaching-powder being principally used for the purpose. Special measures were taken for cleansing purposes, bathing stations being established where the men bathed, and in the meanwhile their uniforms were sterilised and fresh underclothing was served out to them. Destructors were built, or extemporised out of biscuit-tins, etc., in which all the camp refuse was burnt. Special means were devised to prevent waste. Thus in the destructors all the solder from old tins was melted out and collected, and fat from the kitchens was saved and sent home for manufacture into glycerine and munitions. By these measures the health of the Army was preserved to a degree unknown in former campaigns. For example, in 1916, among a total strength of a million and a quarter of all nationalities, the number of cases of enteric fever was 0·2 per 1000 men, whereas in the Boer War the figure was 153 per 1000.

THE February number of the *Museums Journal* contains the report of a conference between Sir Amherst Selby-Bigge, Secretary of the Board of Education, and representatives of the Museums Association, headed by Sir Martin Conway, on the proposed transfer of museums to the local education authorities. The association presented a reasoned protest, laying stress on the fact that the educational activities of museums must necessarily be subsidiary to their primary function of collecting and preserving the works of Nature and of man, and to the study of this material in prosecuting "the highest aim of a museum . . . the advancement of science, art, and industry." It is the results of that study which eventually become available for the education of the public. The arguments in favour of linking up all the museums of the country with the national museums under the control of a separate museum board were advanced by Dr. Bather, who instanced among the prospective advantages of such an arrangement "the loan-circulation of natural history and other objects from the British Museum, the provision of expert help, and the cataloguing of the wealth of our scattered museums." Sir A. Selby-Bigge, in his reply, claimed that the conception of education had recently widened so as to include the chief functions which the deputation assigned to museums. The previous number of the *Museums Journal* reprints, with comments, the recommendations concerning the staffs of the national museums made by a Royal Commission, the report of which (Cd. 7338), issued in April, 1914, was obscured by the smoke of war.

A "SPECIAL Report on the Prevention of Venereal Diseases," by Dr. A. Mearns Fraser, Medical Officer of Health for Portsmouth, has recently been addressed by him to the Health and Housing Committee of the

Borough Council, and is worthy of the careful consideration of all authorities concerned with national health. Dr. Fraser urges that the highest aim of a health authority should be the prevention, not the treatment, of disease, and that the necessity for extensive provision for treatment is evidence of the neglect or failure of prevention. He shows clearly that the successful prevention of venereal disease by scientifically accredited means can be achieved only by the adoption of certain sanitary measures which are readily available and easily applicable. These measures consist in the use of a solution of permanganate of potash immediately after exposure to infection and of an ointment containing calomel. The provision of these disinfectants by any local health authority is not suggested, but the authority is recommended to take such steps as are necessary to spread the knowledge of the means of self-disinfection, so that those who insist on satisfying their sexual appetites by promiscuous intercourse may be instructed how to protect themselves from diseases which, when contracted, are notoriously so often communicated to innocent women and children. Since it is far more easy to disinfect men than women, it is rightly urged by Dr. Fraser that it is of the first importance to prevent the infective germs from entering the body of the male, for if one sex can be protected from infection venereal diseases will be well on the way towards extinction. The report gives ample consideration and reply to various objections which have been persistently made against the inclusion of venereal diseases in the category of infectious and preventable diseases which can now be dealt with on scientific lines.

A CURIOUS case of stone worship is described by Mr. H. A. MacMichael among the Tungur-Fur tribe in the Sudan (*Sudan Notes and Records*, vol. iii., No. 1, January, 1920). The stone is known as the "Bride's Stone" or the "Custom Stone." Rites are performed on marriage, at the circumcision of a child, at a birth, and when a high official visits the place. But that at marriage is, as the name implies, the most usual. After the marriage rite the pair are made to rub some blood of a sacrificed animal on the stone in the form of a cross. If they are too poor to afford this, they offer a piece of cowdung. Then they are taken to a neighbouring well, where the officiant takes a piece of mud from the pool, daubs it on the foreheads, shoulders, waists, knees, and loins of the couple, and binds some green grass on their necks, ankles, and wrists—all doubtless intended as a fertility charm.

LAST year the Norfolk and Norwich Naturalists' Society attained its jubilee, and we congratulate its members on their fifty years of good work. The very name of "naturalist" is in danger of extinction. Our pursuits are so specialised that we have ornithologists, marine biologists, and protozoologists who yet could scarcely be called naturalists. Another peril to the name of naturalist was brought about by Mr. Arthur Balfour's use of the word "naturalism" to denote what other people call "materialism." It would be a thousand pities to lose familiarity with this most honourable name of naturalist, or to pervert it to a false use. Happily, we are safe so long as the Norfolk and Norwich Naturalists' Society flourishes, and others like it. Its latest number of Transactions (vol. x., part v., 1918–19) is altogether admirable, with Mr. W. P. Pycraft's paper on "Some Neglected Aspects in the Study of Young Birds," Mr. Robert Gurney's "Breeding Stations of the Black-headed Gull in the British Isles," and Mr. W. G. Clarke's "The Fauna and Flora of an Essex Common." The whole issue is well illustrated and well edited; and Dr. Sydney Long, the society's hon. secretary and editor, says truly that new problems and new points of view continually arise. "It is to be hoped that members of our society may devote attention in the future to such questions as the limiting factors in the distribution of our flora and fauna, to the peculiar physical and biological features of our great asset, the Norfolk Broads, or even to such practical questions as the advancement of agricultural methods by the application of modern ideas on heredity and soil fertility."

THE Sumatran hare (*Nesolagus Netscheri*) is one of the rarest of known mammals. Hitherto only two specimens have ever found their way into a museum, and these are in the Natural History Museum at Leyden. Messrs. E. Jacobson and C. Boden Kloss are therefore to be congratulated on being able to describe four recently captured examples in the Journal of the Federated Malay States Museums (vol. vii., part iv.). The specimens were obtained by Mr. Jacobson after a long and almost hopeless search in south-west Sumatra. In its coloration this animal is remarkable, being broadly striped with dark brown on a "buffy or greyish" background, forming a striking pattern, which is admirably shown in two photographs of a living animal. The skin of this creature is so exceedingly thin that it was possible to prepare the specimens captured only after hardening in spirit. It is nocturnal in its habits, and haunts the remote parts of the forest at an altitude of from 600 to 1400 metres. Hence it is almost unknown, even to the natives. So far as can be ascertained, it would seem to live in burrows at the base of big trees or in holes in the ground made by other animals. Mr. Jacobson succeeded in keeping one of the specimens here described for more than a year, during which time it fed readily upon cooked rice, young maize, bread, and ripe bananas. But its favourite food in the wild state would appear to consist chiefly of the juicy stalks and leaves of different species of Cyrtandra, which plants form a large part of the undergrowth of the forests in which it lives. Repeated experiments showed that these plants were preferred to all others, and were consumed in large quantities.

THE *Philippine Journal of Science* (vol. xiv., No. 6) contains an account by H. A. Lee and H. S. Yates of the so-called "pink disease" which has recently appeared in the Philippines, spreading rapidly and causing serious stem- and branch-disease of citrus-trees. The organism is a well-known fungus, *Corticium salmonicolor*, which, though not previously reported upon citrus, is known to cause disease on rubber-trees (*Hevea brasiliensis*), cocoa, coffee, and other plants, economic and wild, in the Orient, where it is now widely distributed, though in 1900 the disease was practically unknown.

THE Journal of the Franklin Institute for February contains the address on "Sound-ranging as Practised by the United States Army during the War" delivered at the meeting of the physics section of the institute in October last by Prof. A. Trowbridge, of Princeton University. The methods used were those developed by our own Sound-ranging Section, and are known to many of our readers. They depend on the differences of the times of arrival of the sound of a gun at six stations near the gun, and are both sensitive and instrumentally very accurate. The residual errors are almost all due to uncertain meteorological conditions at the time of observation. As compared with other methods of location of enemy guns, the American experience is summed up in the following numbers:—During a three weeks' rapid advance sound-rangers accounted for 21 per cent., and flash-rangers for 79 per cent., of the guns located. During the two following weeks, when the advance had been checked, sound was credited with 54 per cent., and light with 46 per cent., of the locations. These records are characteristic, and show that the Sound-ranging Section required a little longer to get into efficient action than the Flash-ranging Section.

WE have received a copy of the first volume of the *Chemical Age* (June–December, 1919). Besides more or less ephemeral matter, the volume contains a number of important articles possessing a permanent interest. Among these may be mentioned "The Chemist's Place and Function in Industry," by Sir Robert Hadfield; "Recent Developments in Industrial Catalysis," by Dr. H. S. Taylor; "The Commercial Synthesis of Organic Compounds from Acetylene," by Mr. M. J. Marshall; and "The Synthesis of Ammonia," by Dr. E. B. Maxted. A useful feature of the journal is the weekly account, with illustrations, of patent literature; this keeps the reader early in touch with advances made both in this country and abroad, and will be of value to the industrial chemist and the chemical engineer. It is satisfactory to find that the promising standard of the early numbers is well maintained in the later issues.

IT is more than a hundred years since Sir Humphry Davy first described his wire-gauze safety lamp to the Royal Society (1818). The chief use of the lamp has, of course, been in the coal-mining industry. Danger of gaseous explosions also exists, however, in various chemical works where inflammable liquids are dealt with, a frequent cause being the use of naked lights in the repair or cleansing of large holders in which such liquids have been stored. Even at some distance from the liquid a naked light may be dangerous, as vapour given off may render the atmosphere capable of propagating flame. Attention is directed to this fact in the Journal of the Society of Chemical Industry (February 28) by Mr. W. Payman, who advocates the use of some form of safety lamp where artificial illumination is required in such circumstances, and describes various forms of lamp suitable for the purpose.

ENGINEERS who have to solve problems based on the properties of steam, and especially those connected with steam turbines, will welcome a new alignment diagram constructed by Mr. D. Halton Thomson, and published in *Engineering* for March 5. The principal part of the diagram is based on Callendar's equations for the properties of steam, and by applying the principle of duality Mr. Thomson has succeeded in producing an alignment diagram which represents not only the simpler of the Callendar equations, but also the others not hitherto amenable to this treatment. The diagram has scales showing (*a*) the total heat of superheated or supersaturated steam, and also the total heat of wet steam; (*b*) the amount of superheat; (*c*) the dryness fraction; (*d*) the total entropy; (*e*) the hydraulic efficiency for multi-stage turbines during superheated or supersaturated expansion; (*f*) the specific volume of superheated or supersaturated steam, and also of wet steam; (*g*) the absolute pressure; and (*h*) the saturation temperature. An auxiliary scale gives the relation of the heat drop and the steam velocity, and the Wilson point is marked on the chart. A straight-edge laid across the scales gives the whole of the required properties at once. As an example of the kind of complex problems which can be answered in this way, we quote the following from the article:—In a four-stage turbine the steam expands in thermal equilibrium from 200 lb. per sq. in. absolute and superheat 100° F. to 1·5 lb. per sq. in. absolute; the stage efficiency is 0·65 and the reheat factor 1·045. Required the pressure, specific volume, and quality at the end of each stage. By no means the least interesting part of the article is an appendix showing the methods employed by Mr. Thomson in transforming the equations to the form desired.

DR. GRIFFITH TAYLOR, the Australian meteorologist, delivered during the war courses of lectures on meteorology to the Commonwealth Flying School and at the University of Melbourne, and as a result he is now publishing, through the *Oxford University Press*, "Australian Meteorology, with Sections on Aviation and Climatology." The volume will include chapters on the study of the weather chart, work at a small station, the peculiarities of the Australian rainfall, the special storms and hurricanes of Australia, actual procedure in upper-air research, the discussion of long-distance forecasting and the application of meteorology to aviation, etc.

IN the *Veterinary Review* for February (vol. iv., No. 1) Mr. Fred Bullock contributes an instructive article on the compilation of bibliographies. Full details are given of the proper manner of compiling a bibliography, and a number of examples of correct and incorrect references to journals and other publications are given and criticised.

MESSRS. CROSBY LOCKWOOD AND SON, 7 Stationers' Hall Court, London, E.C.4, have just issued a new select list of books published by them on chemical technology. A copy will be sent to any reader of NATURE post free upon application to this well-known firm of publishers of modern scientific, industrial, and technical books.